REMARKS

I. Introduction

In response to the Office Action dated January 17, 2006, claims 7, 14, and 21 have been cancelled, claims 1, 4, 5, 8, and 15 have been amended, and 24-38 have been added. Claims 1-6, 8-13, 15-20, and 22-38 are in the application. Re-examination and re-consideration of the application, as amended, is requested.

II. Office Action Objections

In paragraph 1, the Office Action objects to the specification because an Express Mail signature stamp is on the bottom of the Abstract. The Applicants submit a substitute Abstract herewith.

In paragraph 2, the Office Action objects to claims 1 and 8 because they are not terminated by a period. The Applicants have amended claims 1 and 8 to include a period.

III. The Cited References and the Subject Invention

A. The Goldston Reference

U.S. Patent No. 5,956,373, issued September 21, 1999 to Goldston et al. discloses a digital modulation technique, broadcast system, and apparatus for the spectral superposition of an analog AM signal and a novel digitally modulated signal. Multiple mutually orthogonal, continuous-valued noise-like sequences are amplitude and phase modulated. Preferably, modulation coefficients are mapped from the formatted data to be transmitted and basis waveforms are generated which are then modulated by the modulation coefficients. These modulated waveforms may be ASK modulated lowpass waveforms and QAM or in-phase ASK modulated bandpass waveforms. Alternatively, the modulated waveforms may be double sideband QAM modulated lowpass waveforms and QAM modulated bandpass waveforms. In the broadcast system of the present invention, an amplitude modulated signal having a first frequency spectrum is broadcast simultaneously with a plurality of amplitude and/or phase modulated orthogonal noise-like signals having a bandwidth which encompasses the first frequency spectrum. The amplitude modulated signal includes a first carrier modulated by an analog signal. A first group of the amplitude and/or phase modulated orthogonal noise-like signals lying within the first frequency spectrum are

modulated in-quadrature with said first carrier signal. The second and third groups of the amplitude and/or phase modulated orthogonal noise-like signals lie outside of the first frequency spectrum and are modulated both in-phase and in-quadrature with the first carrier signal.

B. The Baum Reference

U.S. Patent No. 5,233,632, issued August 3, 1993 to Baum et al. disclose a communication system receiver apparatus and method for fast carrier acquisition. A communications system receiver (100) is disclosed which receives a transmitted signal over a radio channel. The transmitted signal includes data and a predetermined synchronization sequence. The receiver (100) includes a demodulator (215), and a stored replica (207) of the predetermined synchronization sequence. The receiver (100) further includes apparatus (102) for computing (308) a reconstructed signal, by using the channel impulse response characteristic and the stored replica (207) of the synchronization sequence. A feature of the invention is to estimate (310) a phase offset value between an incoming signal and the reconstructed signal, for a plurality of synchronization symbols. This serves to establish (315) a relationship between the phase offset and a synchronization symbol index. The receiver then employs this relationship to derive (317) at least one "previous" phase state (214) for initializing (314) the demodulator (215).

C. The Tsujimoto Reference

U.S. Patent No. 5,493,307, issued February 20, 1996 to Tsujimoto discloses a maximal diversity combining interference cancellation using sub-array processors and respective delay elements. A sidelobe canceler includes a main antenna, an array of sub-antennas, a subtractor having a first input connected to the main antenna, a main-array processor and M sub-array processors. The main-array processor multiplies the outputs of the sub-antennas with weight coefficients using correlations between the sub-antenna outputs and the subtractor output and combines the multiplied signals into a signal, which is coupled to the second input of the subtractor. The signal-to-noise ratio of the subtractor output is maximized by an adaptive matched filter. Each sub-array processor multiplies the sub-antenna outputs with weight coefficients using correlations between the sub-antenna outputs and a decision signal. The multiplied signals are summed to produce an output of each sub-array processor, which is combined with the outputs of the other sub-array processors into a first diversity-combined signal, the latter being combined with the matched filter output to produce a

second diversity-combined signal. Intersymbol interference is removed by an adaptive equalizer from the second diversity-combined signal according to a decision error so that the decision signal is produced and applied to the sub-array processors. Different amounts of delay are introduced to the outputs of (M-1) of the sub-array processors so that the output of the i-th sub-array processor is delayed by (i-1).tau., where i=2,3, . . . , M, and different amounts of delay are introduced to the decision signals applied to (M-1) of the sub-array processors so that the decision signal applied to the j-th sub-array processor is delayed by (M-j).tau., where j=1,2, . . . , M-1. The total amounts of delay associated with each of the M sub-array processors is equal to (M-1).tau..

D. The Nam Reference

U.S. Patent No. 6,515,713, issued February 4, 2003 to Nam discloses a method and apparatus which compensates for channel distortion. A method and apparatus for compensating for channel distortion is disclosed. In the present invention, equalization is performed in the treating sequence mode when the moving ghost does not exist in the channel and there is no possibility that the equalizer diverges, the data mode is cancelled and the equalization is carried out in the blind mode when the moving ghost does not exist in the channel but there is a possibility that the equalizer diverges, the equalizer is executed in the data mode when there is no possibility that the equalizer diverges but there exists the moving ghost including slowly moving ghosts in the channel, and the equalization is performed in the data mode and blind mode when the moving ghost exists and there is a possibility that the equalizer diverges.

IV. Office Action Prior Art Rejections

In paragraphs (3)-(4), the Office Action rejected claims 1-2, 8-9, and 15-16 under 35 U.S.C. § 102(b) as anticipated over Goldston et al., U.S. Patent No. 5,956,373 (Goldston). In paragraphs (5)-(6), the Office Action rejected claim 15 under 35 U.S.C. §102(b) as being anticipated by Baum et al., U.S. Patent No. 5,233,632 (Baum). In paragraphs (9)-(10), the Office Action rejected claims 3, 10, and 17 under 35 U.S.C. §103(a) as being unpatentable over Goldston in view of Nam, U.S. Patent No. 6,515,713 (Nam). The Applicants respectfully traverse these rejections.

Claims 1, 8, and 15 have been amended to claim the embodiment disclosed in FIG. 21 of the Applicant's disclosure. None of the cited references discloses a method or an apparatus having the features listed in the amended claims, specifically, the non-coherently layered signal structure and the

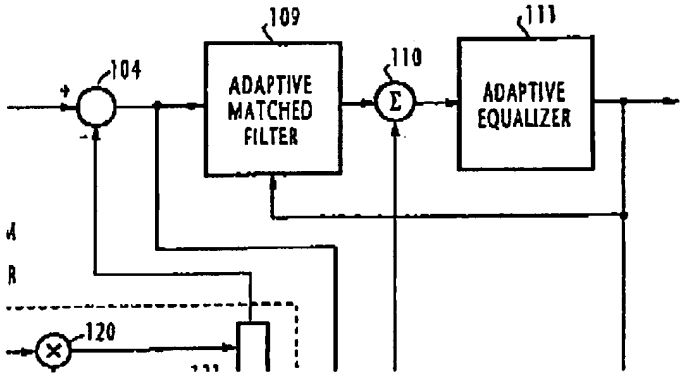
combination of elements that operate on that non-coherently layered signal for purposes of equalization.

In paragraphs (7)-(8), the Office Action rejected claims 22-23 under 35 U.S.C. §102(b) as being anticipated by Tsujimoto, U.S. Patent No. 5,493,307 (Tsujimoto). Applicants respectfully traverse these rejections.

Claim 22 recites:

> *A blanket equalizer for equalizing digital data signals, comprising:*
> *a transversal filter for receiving a reconstructed symbol sequence from another equalizer and for filtering the reconstructed symbol sequence; and*
> *an adder for summing an input signal and the filtered reconstructed symbol sequence output from the transversal filter to create an estimated symbol sequence.*

According to the Office Action, element 109 of Tsujimoto is analogous to a the transversal filter receiving a reconstructed symbol sequence from another equalizer and for filtering the reconstructed sequence, as shown, for example, in FIG. 1, reproduced below:



However, the adaptive matched filter (109) does not filter a reconstructed sequence. The signal line extending from the output of the adaptive equalizer 111 (the "other equalizer" recited in the claim) is not provided as an input that is filtered by the adaptive matched filter (109). Instead, the line represents the notion that the output of the adaptive equalizer (111) is used to control tap weights in the adaptive matched filter (109). This is made clear from the specification at col. 5, lines 51-60, as reproduced below:

> In addition, the signal received by the main antenna **101** is also a multipath-fading related, delay-dispersed signal. The use of the adaptive matched filter **109** is to converge the time-dispersed components of the desired signal to the reference timing. Specifically, the adaptive matched filter **109** is a transversal filter where the tap-weight coefficients of the filter's delay line are adaptively controlled in accordance with the decision output of adaptive equalizer **111** so that the complex conjugate of their time reversals are equal to the channel impulse response.

The Applicants therefore respectfully traverse this rejection.

V. Dependent Claims

Dependent claims 2-6, 9-13, 16-20, and 23 incorporate the limitations of their related independent claims, and are therefore patentable on this basis. In addition, these claims recite novel elements even more remote from the cited references. Accordingly, the Applicant respectfully requests that these claims be allowed as well.

VI. New Claims

New claims 24-38 are presented for the first time in this Amendment. For the reasons described above, new claims 24-38 are patentable over the prior art of record, and the Applicant respectfully requests the allowance of these claims as well.

VII. Conclusion

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited. Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicants' undersigned attorney.

Respectfully submitted,

Date: April 12, 2006

Georgann S. Grunebach, Registration No. 33,179
Attorney for Applicants

The DIRECTV Group, Inc.
RE/R08/A109
2230 E. Imperial Highway
P. O. Box 956
El Segundo CA 90245-0956

Telephone No. (310) 964-4615